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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,307	06/30/2000	Satyendra Yadav	10559/228001/P8793	9835

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FISH & RICHARDSON, PC
12390 EL CAMINO REAL
SAN DIEGO, CA 92130-2081

EXAMINER

PHAN, MAN U

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 04/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/608,307

Applicant(s)

YADAV ET AL.

Examiner

Man Phan

Art Unit

2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-10 and 12-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-10 and 12-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to Amendment and Argument

1. This communication is in response to applicant's 03/08/2004 Amendment in the application of Yadav et al. for a "Packet processing in a router architecture" filed 06/30/2000. The proposed amendments to the claims have been entered and made of record. Claims 2, 3, 11 have been canceled per applicant's request, and claims 1, 5, 6, 10, 12, 19, 22, 25 have been amended. Claims 1, 4-10 and 12-30 are pending in the application.

2. Applicant's amendment and argument to the amended claims are insufficient to distinguish the claimed invention from the cited prior arts or overcome the rejection of said claims under 35 U.S.C. 103 as discussed below. Applicant's argument with respect to the pending claims have been fully considered, but they are not persuasive for at least the following reasons.

3. Applicant's argument with respect to the rejected claims (page 10, first and second paragraphs) that the cited reference does not teach or suggest of "*a separate switch and controller forming a router*". However, Noriyuki (US#6,510,159) is applied merely for the teaching of a router that transfers packets using virtual interface (that links plural networks using a virtual channel on one physical interface). Noriyuki teaches in Fig. 1 a block diagram illustrated a routing system, in which the router (1) consists of an IP control unit (6) (*controller unit*) and a separate routing processing (*switch*) unit (7) (Col. 3, lines 27-49). Furthermore, Lowry et al. teaches in Figs. 1&3 block diagrams

Art Unit: 2665

illustrated the functionalities of a virtual Ethernet interface interconnecting a computer at a customer premise with a central office using VPI/VCI of packet transfer information, in which a CO controller unit (84) (part of the physical interface card 52) is separated with the CO switch unit (22) for routing calls to and from the customer premise (12) (Col. 5, lines 14 plus, and Col. 11, lines 41 plus). Therefore, examiner maintains that the references cited and applied in the last office actions for the rejection of the claims are maintained in this office action.

Claim Rejections - 35 USC ' 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 2665

consider the applicability of 35 U.S.C. 1038 and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noriyuki (US#6,510,159) in view of Lowry et al. (US#5,970,066).

With respect to claims 1, 4-10, 12-18, both Noriyuki (US#6,510,159) and Lowry et al. (US#5,970,066) disclose a novel routing system for packet processing utilizing virtual interface according to the essential features of the claims. Noriyuki provides a router architecture that executes a high-rate packet transfer process with an address table while a virtual interface is being used (See Fig. 1; Col. 1, lines 51 plus). Noriyuki discloses in Fig. 2 a flow chart illustrated a function process flow of the routing processing unit 7 in the router, in which the records entered in address table (72) are comprised of a destination address and an address of the next hop in the network layer, each being a search key thereof, (a destination address of a network layer when a packet can be directly transmitted), and an aging timer for aging packet transfer information and table entries. When packets are transmitted to the LAN interface, the table stores the header of a data link layer and a transmitted destination interface. When packets are transmitted to an ATM interface, the table stores call information (VPI (Virtual Path Identifier)/VCI (Virtual Channel identifier)) to be transmitted (Col. 3, lines 38 plus). Furthermore, Noriyuki's router has an address table on which a set of a destination address of a network layer, an address of a next hop on a packet relay route, and packet transmission information is stored, retrieved, and removed as one entry. The address table stores as transmission information of a packet a destination address of a network

layer and an address of a next hop at a packet transfer time, a header of a data link layer and a transmitted interface when a packet is transmitted to a LAN interface, and call information (Virtual Interface) at an ATM when a packet is transmitted to an ATM interface. Packets are directly transmitted to a physical interface using the address table storing the packet transmitted from each interface, without executing a routing process (See Fig. 2 and the Abstract).

In the same field of endeavor, Lowry et al. (US#5,970,066) provides for a Virtual Ethernet Interface for interconnecting a first computer at a customer premise and an Ethernet LAN at a central office. Lowry discloses in Fig. 1 illustrated a virtual Ethernet interface comprises a virtual interface card connected to the first computer and a physical interface card connected to a second computer that is in communication with the Ethernet hub. On start up, the central office computer sends the MAC address associated with the Ethernet interface of the physical interface card back to the virtual interface card of the first computer. Thus, the virtual Ethernet interface allows the first computer to form Ethernet frames using the MAC address of the physical interface card so that it appear as though they were originated from the second computer. Further, the first computer can receive frames taken from the Ethernet LAN by the physical interface card and transmitted to the virtual interface card over the DSL link (Col. 2; lines 38 plus).

Regarding claims 19-24, they are method claims corresponding to the apparatus claims 1-18 above. Therefore, claims 19-24 are analyzed and rejected as previously discussed with respect to claims 1-18.

With respect to claims 25-30, These claims differ from claims Noriyuki in view of Lowry in that the claims recited a computer program product for performing the same

basis of steps and apparatus of the prior arts as discussed in the rejection of claims 1-24.

It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Noriyuki in view of Lowry for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to packet processing in a router architecture, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently processing packet utilizing virtual interfaces, and would have applied Lowry's teaching of the virtual Ethernet interface for interconnecting into Noriyuki's novel use of the routing processing unit in the router architecture. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Lowry's virtual Ethernet interface into Noriyuki's router and routing method with the motivation being to provide a method and system for packet processing in a router using virtual interface.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Futral et al. (US#5,991,797) is cited to show the method for directing I/O transactions between an I/O device and a memory.

The Shah et al. (US#6,347,337) is cited to show the credit based flow control scheme over virtual interface architecture for system area networks.

The Harvey (US#5,867,666) is cited to show the virtual interfaces with dynamic

Art Unit: 2665

binding.

The Regnier et al. (US#6,647,423) is cited to show the direct message transfer between distributed processes.

The Coffman et al. (US#6,718,370) is cited to show the completion queue management mechanism and method for checking on multiple completion queues and processing completion events.

The Reid et al. (US#6,711,163) is cited to show the data communication system with distributed multicasting.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION THIS ACTION IS MADE FINAL**. See MPEP ' 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2665

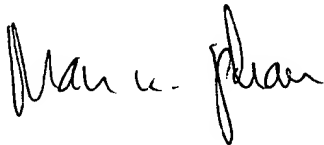
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (703)305-1029. The examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Mphan

04/23/2004.



MAN PHAN
PATENT EXAMINER